

# PICTORIAL BIOLOGY OF A LEAFCUTTER BEE

*Megachile chrysopyga* Smith

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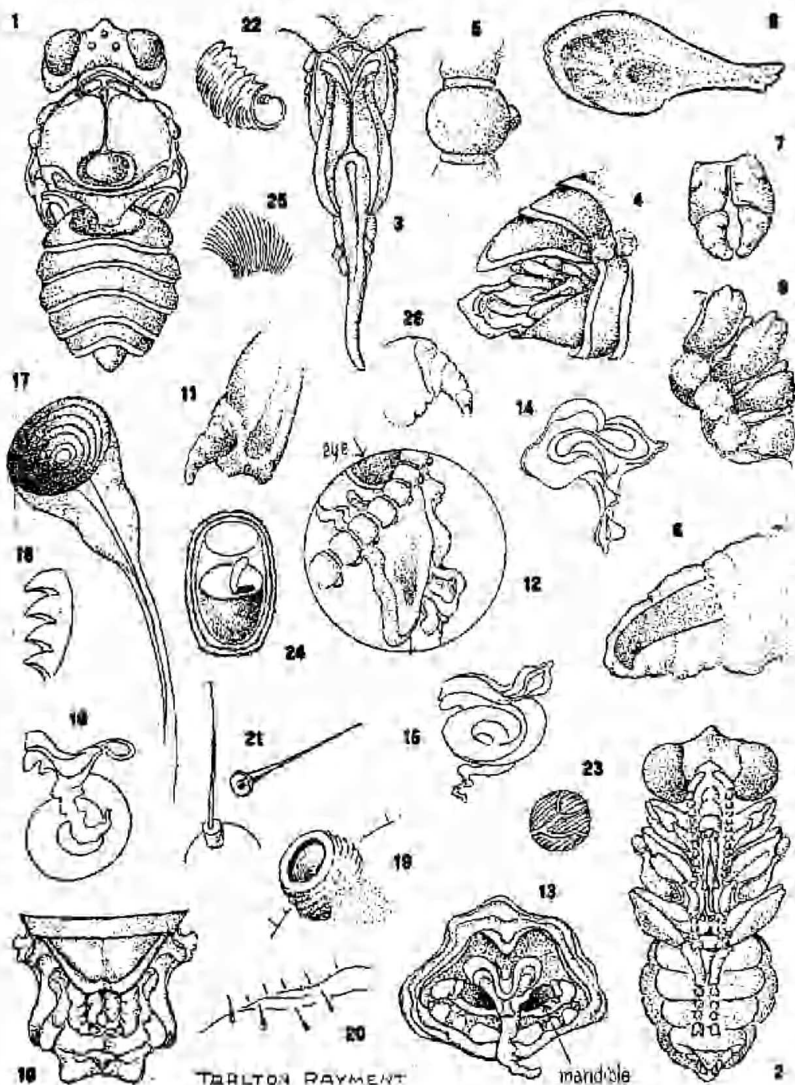
The genus *Megachile* contains two groups, the one pinking leaves and the other modelling in resin and wax. Moreover, in the first group the abdomen is shovel-shaped, as in *M. chrysopyga* Sm. while in the second it is longer and parallel-sided, as in *M. phillipensis* Raym. The famous French naturalist, Jean Henri Fabre, regretted that bees were not classified according to their trade rather than their uniform. This concept is evidently shared by Prof. T. D. A. Cockerell, who has placed those species that model in wax and resin in his new subgenus *Hackeriapis*.

Hymenopterists agree that bees evolved from wasps, and, after making thousands of dissections, the author concludes that there can be no other verdict. The evidence afforded by body-structure is supported by a study of the insects' habits. The leaf-cutting bees are proficient in the art of pinking or cutting leaves, and are able to measure sizes accurately so as to produce truly artistic work. Size is not determined mechanically, for dimensions vary according to circumstances.

I was delighted to discover one wasp, the graceful red and black *Discoelius ecclesiasticus* Raym., certainly of the Odyneri, the mud-dauber family, yet departing from her traditional trade to pink the trifoliate leaves of the "Running Postman", *Kennedyia prostrata*. Admittedly, she lacks the artistry of the leaf-cutting bees, for there are no circles and true ellipses, but only ragged pieces slashed out haphazardly. These are then chewed into a fine vegetable putty and used in the forming of cell-divisions. This is crude work perhaps, but it should be noted that many members of *Megachile* still plaster a wad of similar "putty" to seal the door of their home.

The accompanying set of illustrations shows the interesting biology of *Megachile chrysopyga*, a true leaf-cutter bee. The story told by these pictures is as follows:

1—Dorsal view of female pupa before shedding the fifth or final pellicle on Feb. 25, 1953. 2—Ventral view; the compound eyes are beginning to colour purple. 3—The development of the mouth-parts; note the long glossa. 4—Lateral view of the invagination of the apical segments of the female abdomen. 5—Each of the segments of the flagellum has a large tubercle. 6—Through the wing-pad of the pupa may be seen the developing nervures inside. 7—The fifth tarsal segment shows the first signs of bifurcation. 8—Lateral view of some of the ridged segments of the fully-developed larva showing the tubercles before the fourth pellicle was cast on Jan. 20, 1953. 9—The amber chitinous claw was visible through the fifth pellicle on Feb. 14, 1953. 10—Dorsal view of the invagination of the abdomen of the female showing the two embryonic gonostyli. 11—Posterior tibia showing the developing calcar; the strigilis of the anterior leg is very similar at this stage. 12—Lateral view of the mouth-parts; the mandible was being gradually chitinized inside the skin. 13—Looking into the cast pellicle (the fourth) from the front; the dark larval mandibles were attached to the pellicle. 14, 15 & 16—Even the dry pellicle is not without beauty. 17—Portion of a long tracheal tube was shed with the pellicle; interior of the spiracle. 18—There are about four lines of serrations inside the mouth of the spiracle. 19—Exterior of one of the spiracles cast off with the fourth pellicle on Jan. 20, 1953. 20—All the hairs of the larva are attached to the dry pellicle. 21—Two of the hairs more highly magnified; they are sensory in function, with a nerve along the centre. 22—Several elliptical pieces of leaf were used to build the walls of the cells. 23—Four or five circular pieces form



the divisions between the cells. 24—Graphic section of a cell with the pollen-pudding and an egg, on approx. Feb. 1, 1952. 25—There were two tufts of appressed hair on the scutellum, under the fifth pellicle. 26—Elements of a spur on the posterior coxa; the coxae in *Megachile* are often spined. The bees emerged from their cells on the morning of February 26, 1953, therefore, 391 days are required by this species for complete development from egg to imago.